STN ENVIRONMENTAL JV REGION 5 START
SITE SPECIFIC SAMPLING AND ANALYSIS PLAN
SHORT FORM

Project Information

TDD No.: S05-0808-001	TDD Type: Removal Assessment	Analytical TDD No.: S05-0808-002
Site Name: M&H Zinc	City/County: LaSalle/LaSalle	State: IL
STN Project Mgr.: Chad Gibson	EPA Project Mgr.: Ken Theisen	

Site Lead: ☒US EPA ☐State ☐PRP_____ ☐Other_____

Sampling Information

Site Description:
The entire M&H Site occupies about 160 acres inclusive of inactive primary zinc smelting operations and associated abandoned buildings, a rolling mill, and the active Carus Chemical Company and its property. A large slag pile exists on the site and is bordered by the Little Vermilion River. The slag pile has very steeps sides that are sloughing off into the river.

The M&H Site began operations in 1858, when raw materials such as zinc ore and various grades of coal were transported to smelt zinc. A rolling mill was built on site in 1866 to produce zinc sheets. The M&H Site also had an ammonium sulfate fertilizer plant that operated for a few years during the early 1950s. Coal mining occurred at the M&H Site until 1937, and two mining shafts (one vertical and one horizontal) remain today. Zinc smelting ceased in 1961, and sulfuric acid manufacturing halted in 1968. From 1961 until 1978, when bankruptcy was declared, the facility only performed rolling mill operations. The 12-acre tract containing the rolling mill was purchased by Fred and Cynthia Carus in 1980 and became the LaSalle Rolling Mills. The Carus Chemical Company has been in operation since 1915 and is located on the southern portion of the M&H Site south of the rolling mill area. Various chemicals are produced at this chemical plant, such as potassium permanganate, sodium permanganate, manganese dioxide catalysts, and blended phosphate. Wastewater generated during production of potassium permanganate is discharged to a treatment pond and eventually into the Little Vermilion River pursuant to a National Pollutant Discharge Elimination System (NPDES) permit.

Currently there are several abandoned buildings including a laboratory. These buildings are suspected to contain asbestos containing materials (ACM) and the laboratory has some unknown chemicals.

Sampling Summary:(START Role, Collection Method, etc.): START is tasked by U.S. EPA to collect ACM samples from various buildings throughout the site. Locations will be determined in the field upon visual inspection. START will collect samples from unknown waste materials in the abandoned laboratory buildings. Samples will be analyzed for VOCs, SVOS, Total Metals, TCLP Metals, pH, and flashpoint analysis. START is prepared to collect waste liquid and solid material. Level of PPE during sampling ranges from Level D to Level B based on sampled material, air monitoring readings, pH and contents of waste.

Date of Sampling Event: August 26, 2008 Sample Shipment Date: August 26, 2008 (hand delivery)

Data Deadline: Verbal: 2 weeks Hardcopy: 4 weeks

Weather Conditions: Temp (70° – 80° F): Sky Condition: TBD Wind Speed /Direction: TBD

Type of Sampling: ☐ Site Characterization ☐Disposal Characterization☐ Confirmation
☐ Split-Samples ☐ Extent of Contamination ☒ Other: Removal Assessment

Laboratory: Field Tests:
☐ Mobile:
☐ CLP: _____ ☒Subcontracted: STAT

Required Detection Limits:☒ Method Quantitation Limits ☐ State Cleanup Values ☐ US EPA PRG Values
☐ Drinking Water ☐ Other _

Table 1 (attached) must include the following information:
- Number of samples collected for each matrix (soil, drums, water, etc.)
- Number and size of containers
- Number of Quality Control (QC) samples collected for each matrix
- Field and Laboratory analytical methods used for analysis

Sample Locations: Sampling locations will be determined in the field based on historical operations, visual inspection, and locations of previously collected samples.

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Approvals	
Signatures:	Date: August 25, 2008
US EPA Project Manager: Ken Theisen	
STN JV Project Manager: Chad Gibson	
STN JV QA Review:	

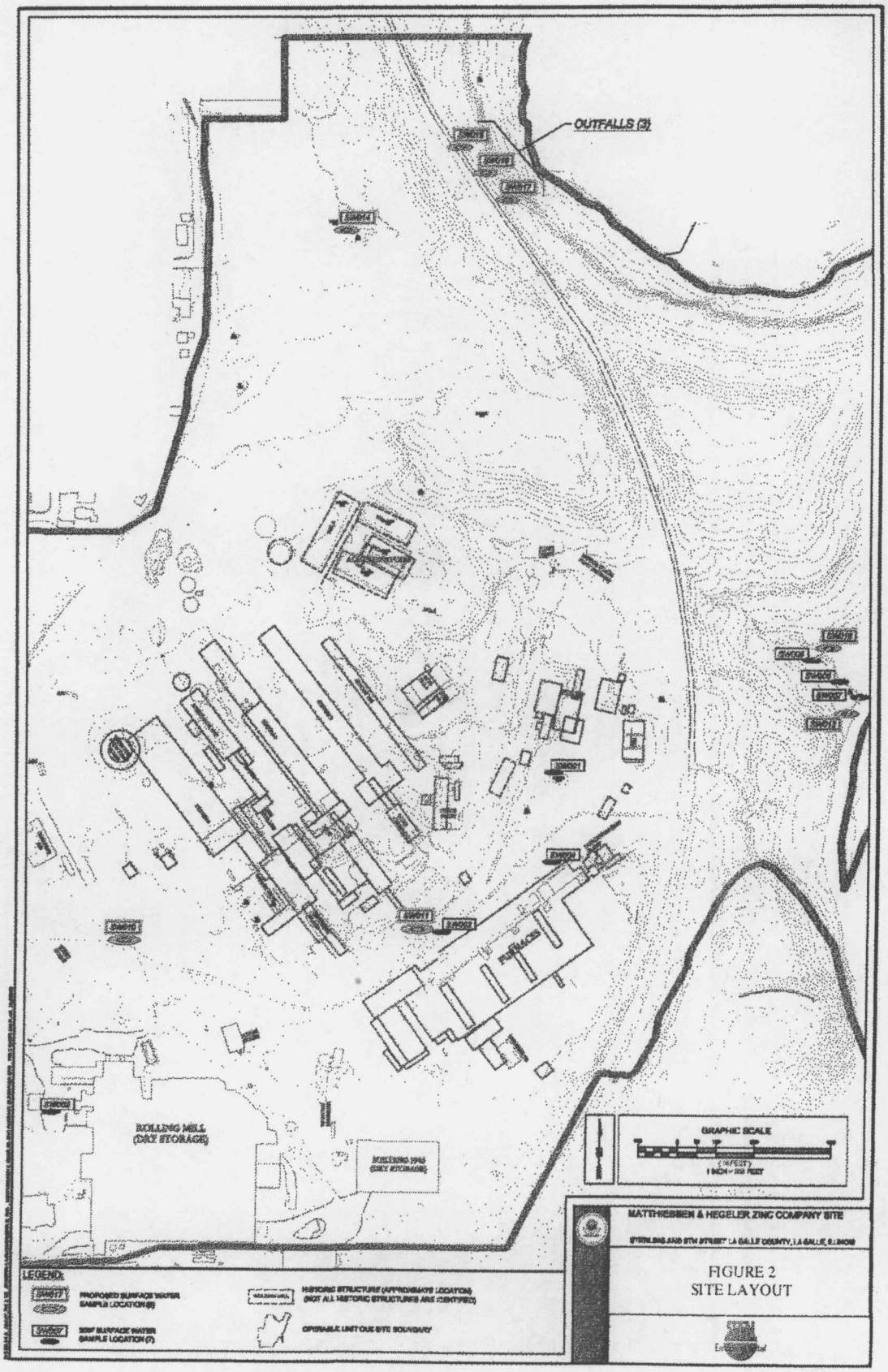
Table 1
Sampling Requirements Worksheet
M&H Zinc

Matrix[1]	Parameter/Method[2]	Method	Volume and Container[2]	No. of Investigative Samples	No. of Quality Control (QC) Samples[3]					Total No. of Samples (Investigative + QC)	Total No. of sample containers
					MS/ MSD	Field Duplicate	Equipment rinsate Blank [4]	Field Blank	Trip Blank		
Liquid	RCRA VOCs-TCL 3.4 List	SW-846 8260B	One 8-ounce glass jar	3	1	0	0	0	1	5	4
Liquid	RCRA SVOCs-TCL 3.4 List	SW-846 8270C	One 8-ounce glass jar	3	1	0	0	0	0	4	4
Liquid	RCRA Metals	SW-846 6010	One 8-ounce glass jar	3	1	0	0	0	0	4	4
Liquid	pH	SW-846 9045C	One 4-ounce glass jar	3	1	0	0	0	0	4	4
Liquid	Ignitability	SW-846 1010/1020A	One 4-ounce glass jar	3	1	0	0	0	0	4	4
Solid/ Waste	TCLP VOCs	SW-846 1311/8260B	Three 40-mL screw-top septum-sealed glass vials	6	1	0	0	0	0	7	21
Solid/ Waste	TCLP SVOCs	SW-846 1311/8270C	One 8-ounce glass jar	6	1	0	0	0	0	7	7
Solid/ Waste	TCLP Metals	SW-846 1311/6010B/7471A	One 8-ounce glass jar	6	1	0	0	0	0	7	7
Solid/ Waste	Total VOCs	SW846-5021, 8260B	Three 40-mL screw-top septum-sealed glass vials	6	1	0	0	0	0	7	21
Solid/ Waste	Total SVOCs	SW846-5021, 8270	One 8-ounce glass jar	6	1	0	0	0	0	7	7
Solid/ Waste	Total RCRA metals	SW-846 6010B	One 8-ounce glass jar	6	1	0	0	0	0	7	7
Solid/ Waste	pH	SW-846 9045C	One 4-ounce glass jar	6	1	0	0	0	0	7	7
Solid	Asbestos (bulk)	EPA-600/R-93/116 (EPA-600)	Plastic bag	6	1	0	0	0	0	7	7
Solid/ Waste	Ignitability	SW-846 1010/1020A	One 4-ounce glass jar	6	1	0	0	0	0	7	7

Notes:

1 Matrix includes ACM, solid waste, or liquid waste.
2 Refer to Table 2-2 of the STN JV START Region 5 QAPP for required sample volumes, containers, preservation techniques and holding times.
3 Refer to Section 2.5.1 Field Quality Control Requirements of the STN JV START Region 5 QAPP.
4. Refet to Section 2.5.1 for the Equipment Rinsate Blank, which will be a water sample of the decon material. If non reusable material are being used to collect the sample, no Equipment blank is needed (VOCs core sampling maybe a one time use only). Two sets of water sample (500 ml plastic for metals and 3 40 ml for VOCs). The samples will be collected from the rinsate from the metals sampling material and the TCLP metal and VOCs sampling equipment using the rinsate in 3 40 ml bottles.


SITE
LA SALLE
LA SALLE COUNTY MAP
SITE
LA SALLE
OU-2
OU1
AREA MAP/AERIAL
SCALE: 1 INCH = 1/4 MILE
MATTHIESSEN & HEGELER ZINC COMPANY SITE
STERLING AND 8TH STREET LA SALLE COUNTY, LA SALLE, ILLINOIS
FIGURE 1
SITE LOCATION MAP


OUTFALLS (3)
ROLLING MILL
(DRY STORAGE)
GRAPHIC SCALE
LEGEND:
HISTORIC STRUCTURE (APPROXIMATE LOCATION)
(NOT ALL HISTORIC STRUCTURES ARE IDENTIFIED)
OPERABLE UNIT ONE SITE BOUNDARY
MATTHIESSEN & HEGELER ZINC COMPANY SITE
FIGURE 2
SITE LAYOUT

APPENDIX A
REFERENCES
(EXCERPTS FROM REGION 5 QUALITY ASSURANCE PROJECT PLAN)

2.5.1 Field Quality Control Requirements

Field QC samples will be collected and analyzed to assess the quality of data generated from sampling activities. These samples may include trip blanks, field blanks, equipment rinsate blanks, field duplicates, field split samples, MS samples, MSD samples, and matrix duplicate samples. Field QC measurements may include field replicate measurements and checks of instrument responses against QC standards.

Trip blanks are used to assess the potential for sample contamination during handling, shipment, and storage. Trip blanks are sample bottles filled by the analytical laboratory with organic-free water. The trip blanks are sealed and transported to the field; kept with empty sample bottles and then with the investigative samples throughout the field effort; and returned to the laboratory for analysis with the investigative samples. Trip blanks are never opened in the field. One trip blank is usually included within every shipping cooler of liquid samples to be analyzed for VOCs.

Field blanks are samples of the same or similar matrix as the actual investigative samples that are exposed to the sampling environment or equipment at the time of sampling. They are used to assess contamination resulting from ambient conditions. Field blanks are required for liquid matrices. For aqueous samples, field blanks consist of analyte-free water such as degasified organic-free water for VOC analysis, HPLC water for SVOC analysis, and de-ionized or de-mineralized water for inorganic analyses. Field blanks are generally not required for solid matrices but may be collected on a case-by-case basis. Typically, one field blank is collected for every 10 or fewer liquid investigative samples.

Equipment rinsate blanks are collected when sampling equipment is used. These blanks assess the cleanliness of sampling equipment and the effectiveness of equipment decontamination. Equipment rinsate blanks are collected by pouring analyte-free water over surfaces of cleaned sampling equipment that contact sample media. Equipment rinsate blanks are collected after sampling equipment has been decontaminated but prior to being reused for sampling. Equipment rinsate blanks are typically collected for each type of decontaminated sampling equipment.

Field duplicate samples are independent samples collected as close as possible in space and time to the original investigative sample. Immediately following collection of the original sample, the field duplicate sample is collected using the same collection method. Care should be taken to collect the field duplicate sample as close to the location of the original sample as possible. Field duplicate samples can measure how sampling and field procedures influence the precision of an environmental measurement. They can also provide information on the heterogeneity of a sampling location. Typically, field duplicates are collected at a frequency of one for every 10 investigative samples of the same matrix type.

Field split samples are usually a set of two or more samples taken from a larger homogenized sample. The larger sample is usually collected from a single sampling location, but can also be a composite sample. Field split samples can be sent to two or more laboratories and are used to provide comparison data between the laboratories. Regulatory agencies involved in a project may request that field split samples be collected to monitor how closely laboratories are meeting project-specific QA objectives.

MS/MSD samples are typically collected for analysis by organic methods, and also often for analysis by inorganic methods. Solid MS/MSDs usually require no extra volume. Each liquid MS/MSD sample is a single sample, usually collected from a single sampling location at triple the normal sample volume. MS and matrix duplicate samples are typically collected for inorganic analysis. The MS sample and matrix duplicate sample are each a single sample, usually collected from a single location at double the normal sample volume. In the laboratory, MS/MSD samples and MS samples are spiked with known amounts of analytes. Matrix duplicate samples are not spiked. Analytical results of MS/MSDs are used to measure the precision and accuracy of the laboratory organic (or inorganic) analytical program and MSs are used to measure the accuracy of the inorganic analytical program. Matrix duplicate samples are used to measure the precision of the inorganic analytical program. Each of these QC samples is typically collected and analyzed at a frequency of one for every 20 investigative samples per matrix.

QC checks for field measurements will consist primarily of initial and continuing calibration checks of field equipment. When applicable, QC check standards independent of the calibration standards will be used to check equipment performance. For example, when checking the accuracy of field equipment such as pH meters, a standard buffer solution independent of the calibration standards may be used. Precision of field measurements will usually be checked by taking replicate measurements. To the extent possible, STN will use USEPA-approved field methods. If approved methods are not available, STN SOPs will be referenced in the project-specific QAPP. The types and frequencies of field QC measurements and the QC limits for these measurements will be specified in the project-specific QAPP.

Table 2-1. STN Environmental SOPs

Standard Operating Practice Topic	SOP No
FIELD PREPARATION	**001**
Site Access and Clearance	001A
FIELD RECORDS & DOCUMENTATION	**002**
Field Records and Documentation	002A
Photo-documentation	002B
GEOPHYSICAL INVESTIGATION METHODS	**003**
Setting Up a Geophysical Survey Grid	003A
Electrical Resistivity Techniques	003B
EM31 Terrain Conductivity Meter	003C
EM61 High Sensitivity Metal Detector	003D
Magnetic Geophysical Survey	003E
Seismic Refraction Survey	003F
Ground Penetrating Radar	003G
SURVEYING TECHNIQUES	**004**
Land Surveying Techniques (including GPS)	004A
FIELD SCREENING & FIELD ANALYTICAL METHODS	**005**
Standard Field Parameter Measurements	005A
Soil Field Screening Techniques	005B
Lead Paint Testing Using XRF	005C
Heavy Metals Testing Using XRF	005D
SURFICIAL MATERIAL SAMPLING TECHNIQUES	**006**
Sediment Sampling	006A
Surface Soil Sampling	006B
Surface Water Sampling	006C
Concrete Sampling	006D
Wipe Sampling for Lead Paint	006E
Air Sampling – SVE/VEP Pilot Tests	009D
Air Sampling using XRF	009E
Air-borne Asbestos Fibers Sampling	009F
MicroVac Dust Sampling for Asbestos	009G
ENVIRONMENTAL SAMPLE MANAGEMENT	**010**
Sample Containers, Preservatives, and Holding Times (*Project-specific Only*)	010A
Soil Sample Preservation	010B
Sample Labeling, Control and Shipping	010C
EQUIPMENT MANAGEMENT & DECONTAMINATION	**011**
Decontamination Procedures	011A
IDW MANAGEMENT	**012**

TABLE 2-2
Required Sample Volumes, Containers, Preservation Techniques, and Holding Time

Matrix	Parameter	Analytical Method[a]	Volume and Container	Preservation Techniques	Holding Time[b] (Extraction/Analysis)
Water	Volatile organic compounds (VOC)	SW-846: 8015B, 8021B, 8260B CLP: OLC03.2, OLM04.3, SOM01.1	Three 40-mL glass vials with Teflon®-lined septum	To pH # 2 with hydrochloric acid; *sodium thiosulfate if* residual chlorine; store at 4ºC	NA[c]/14 days
Water	Semi-volatile organic compounds (SVOC)	SW-846: 8270C CLP: OLC03.2, OLM04.3, SOM01.1	Two 1,000-mL amber glass bottles with Teflon®-lined caps	Sodium thiosulfate if residual chlorine present; store at 4ºC	7 days/40 days
Water	Pesticides and herbicides	SW-846: 8081A, 8151A CLP: OLC03.2, OLM04.3, SOM01.1	Two 1,000-mL amber glass bottles with Teflon®-lined caps	Sodium thiosulfate if residual chlorine present; store at 4ºC	7 days/40 days
Water	Polychlorinated biphenyls (PCB)	SW-846: 8082 CLP: OLC03.2, OLM04.3, SOM01.1, CBC01.0	Two 1,000-mL amber glass bottles with Teflon®-lined caps	Sodium thiosulfate if residual chlorine present; store at 4ºC	7 days/40 days
Water	Dioxins and furans	SW-846: 8280A, 8290 CLP: DLM02.0	Two 1,000-mL amber glass bottles with Teflon®-lined caps	Store at 4ºC	30 days/45 days
Water	Metals (except mercury)	SW-846: 6010B, 6020 CLP: ILM05.3	One 1,000-mL glass or polyethylene bottle	To pH < 2 with nitric acid (HNO_3); store at 4ºC	NA/180 days
Water	Mercury	SW-846: 6010B, 7470A CLP: ILM05.3	One 1,000-mL glass or polyethylene bottle	To pH # 2 with HNO_3, store at 4ºC	NA/28 days
Water	Toxicity characteristic leaching procedure (TCLP) VOCs	SW-846: 1311/8260B	One 4-ounce glass bottle	Store at 4ºC	14days/14days

TABLE 2-2 (Continued)
Required Sample Volumes, Containers, Preservation Techniques, and Holding Time

Matrix	Parameter	Analytical Method[a]	Volume and Container	Preservation Techniques	Holding Time[b] (Extraction/Analysis)
Water	TCLP SVOCs	SW-846: 1311/8270C	One 1,000-mL glass bottle	Store at 4ºC	14 days/7 days/40 days[d]
Water	TCLP Metals	SW-846: 1311/6010B	One 1,000-mL glass bottle	Store at 4ºC	180 days/180 days 28 days/ 28 days (mercury)
Water	Ignitability	SW-846: 1010, 1020A	One 4-ounce glass jar	Store at 4ºC	NA
Water	Corrosivity	SW-846: 9040B	One 4-ounce glass jar	Store at 4ºC	NA
Water	Total and amenable cyanide	SW-846: 9010B, 9012A	One 1,000-mL glass or polyethylene bottle	To pH >12 with NaOH; store at 4ºC	14 days
Soil/Sediment	VOCs	SW-846: 5035, 8260B CLP: OLM04.3, SOM01.1	(1) Three 40-mL screw-top septum-sealed glass vials, pre-weighted with magnetic stir bars (2) Three 40-mL screw-top septum-sealed glass vials, pre-weighted with magnetic stir bars (two vials to contain 5 mL of water) (3) Three Encore™ samplers containing 5 grams of soil	Freeze from -7 to -15ºC or store at 4ºC	NA/14 days (if frozen) NA/48 hours (if 4ºC)
Soil/Sediment	SVOCs	SW-846: 8270C CLP: OLM04.3, SOM01.1	One 8-ounce glass jar with Teflon®-lined cap	Store at 4ºC	14 days/40 days
Soil/Sediment	Pesticides, herbicides	SW-846: 8081A, 8151A CLP: OLM04.3, SOM01.1	One 8-ounce glass jar with Teflon®-lined cap	Store at 4ºC	14 days/40 days
Soil/Sediment	PCBs	SW-846: 8082 CLP: OLM04.3, SOM01.1, CBC01.0	One 8-ounce glass jar with Teflon®-lined cap	Store at 4ºC	14 days/40 days

TABLE 2-2 (Continued)
Required Sample Volumes, Containers, Preservation Techniques, and Holding Time

Matrix	Parameter	Analytical Method[a]	Volume and Container	Preservation Techniques	Holding Time[b] (Extraction/Analysis)
Soil/Sediment	Dioxins and furans	SW-846: 8280A, 8290 CLP: DLM02.0	One 8-ounce glass jar with Teflon®-lined cap	Store at 4°C	30 days/45 days
Soil/Sediment	Metals (except mercury)	SW-846: 6010B, 6020 CLP: ILM05.3	One 8-ounce glass jar	Store at 4°C	NA/180 days
Soil/Sediment	Mercury	SW-846: 6010B, 7471A CLP: ILM05.3	One 8-ounce glass jar	Store at 4°C	NA/28 days
Soil/Sediment	TCLP VOCs	SW-846: 1311/8260B	Three 40-mL screw-top septum-sealed glass vials	Store at 4°C	14 days/14 days
Soil/Sediment	TCLP SVOCs	SW-846: 1311/8260B	One 8-ounce glass jar	Store at 4°C	14 days/7 days/14 days[c]
Soil/Sediment	TCLP Metals	SW-846: 1311/8260B	One 8-ounce glass jar	Store at 4°C	180 days/180 days 28 days/28 days (mercury)
Soil/Sediment	Ignitability	SW-846: 1010 or 1020A	One 4-ounce glass jar	Store at 4°C	NA
Soil/Sediment	Corrosivity	SW-846: 9045C	One 4-ounce glass jar	Store at 4°C	NA
Soil/Sediment	Total and amenable cyanide	SW-846: 9010B or 9012A CLP: ILM05.3	One 8-ounce glass jar	Store at 4°C	NA
Waste	VOCs	SW-846: 8260B CLP: OLM04.3, SOM01.	One 8-ounce glass jar with Teflon®-lined cap	Store at 4°C	NA/14 days
Waste	SVOCs	SW-846: 8270C CLP: OLM04.3, SOM01	One 8-ounce glass jar with Teflon®-lined cap	Store at 4°C	14 days/40 days

TABLE 2-2 (Continued)
Required Sample Volumes, Containers, Preservation Techniques, and Holding Time

Matrix	Parameter	Analytical Method[a]	Volume and Container	Preservation Techniques	Holding Time[b] (Extraction/Analysis)
Waste	Pesticides, herbicides	SW-846: 8081A, 8151A CLP: OLM04.3	One 8-ounce glass jar with Teflon®-lined cap	Store at 4°C	14 days/40 days
Waste	PCBs	SW-846: 8082 CLP: OLM04.3, CBC01.0	One 8-ounce glass jar with Teflon®-lined cap	Store at 4°C	14 days/40 days
Waste	Dioxins and furans	SW-846: 8280A, 8290 CLP: ILM05.3	One 8-ounce glass jar with Teflon®-lined cap	Store at 4°C	30 days/45 days
Waste	Metals (except mercury)	SW-846: 6010B, 6020 CLP: ILM05.3	One 8-ounce glass jar	Store at 4°C	NA/180 days
Waste	Mercury	SW-846: 6010B, 7471A CLP: ILM05.3	One 8-ounce glass jar	Store at 4°C	NA/28 days
Waste	TCLP VOCs	SW-846: 1311/8260B	One 4-ounce glass jar	Store at 4°C	14 days/14 days
Waste	TCLP SVOCs	SW-846: 1311/8260B	One 8-ounce glass jar	Store at 4°C	14 days/7 days/14 days[c]
Waste	TCLP Metals	SW-846: 1311/6010B	One 8-ounce glass jar	Store at 4°C	180 days/180 days 28 days/28 days (mercury)
Waste	Ignitability	SW-846: 1010 or 1020A	One 4-ounce glass jar	Store at 4°C	NA
Waste	Corrosivity	SW-846: 9040B	One 4-ounce glass jar	Store at 4°C	NA
Waste	Total and amenable cyanide	SW-846: 9010B or 9012A CLP: ILM05.3	One 8-ounce glass jar	Store at 4°C	NA

Notes:
mL = Milliliter
[a] Analytical methods listed are from either SW-846 (Test Methods for Evaluating Solid Waste) or CLP (Contract Laboratory Program) Statements of Work.
[b] Holding time is measured from the time of sample collection to the time of sample extraction and analysis.
[c] NA = Not applicable
[d] SVOCs holding time for Method 1311 include time to extraction/leachate/analysis of sample.